Chemical Safety Basics: What Employers Need to Know



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TIME: 9:00 – 10:30 AM PST

SPEAKER: Daniel Clark, Clark Health & Safety

Chemical exposure is possible at practically every worksite, and an employer is responsible for understanding the risk and how to safely handle chemicals. Not every chemical is in a labelled bottle – byproducts from processes, or produced by other chemical interactions may still cause harmful exposure and need to be monitored to ensure worker safety.

Chemicals may have acute or chronic effects, and there are generally accepted levels of exposure that are considered safe for certain exposure durations. However, this information is debated, often changes as new information becomes available, and is based on available data that may come from lab animal proxies, be self-reported or casually observed.

There are various routes of exposure, and these must be understood to handle chemicals safely. They may be skin absorbed, inhaled, injected, ingested, or exposed to the mucosa, causing all types of reactions. The exposure hazards highly inform what controls are appropriate for handling the material. The SDS describes all of this information (as much as is known).

Permissible exposure limits/Occupational exposure limits/Threshold limit values give some insight into how to measure exposure, and how to calculate multiple exposures. Short exposures or ceiling limits may be established for some substances. This is the stock-in-trade for specialists called industrial hygienists – what do they do?

IDLH are levels of exposure that will immediately cause health effects or death. Some discussion of where, when and how these occur, and how they are managed.

Cases:

- Asbestos – what is the history of asbestos and why is it so maligned today? Most are familiar with asbestos to an extent, but may not know why it was so widely used and why there is so much of it still out there. The controls on working with it are incredibly tight, making it a good example of how chemical exposure must be handled when it poses so great a potential risk to the worker and the public.
- Benzene – How were workers exposed, what was it for and what of other carcinogens? Benzene was a useful chemical and an excellent solvent, but over time it was realized that it had the potential to cause cancer. As with other cancer-causing materials, the connection was hard to establish because of the lag time between the cause and effect. Because of its chemical properties, benzene could pass through the skin barrier and cause harm.
- Radium – Classic example of misunderstood risk. The substance is radioactive but was once used to paint watch faces in order to make them glow. What resulted were workers with massive facial tumors – a result of them licking the paintbrushes containing the hazardous paint.
- Carbon monoxide – exposure may come from any combustion or a number of natural processes. It doesn't come in a bottle and may occur unintentionally in a workspace, but exposure nonetheless must be controlled and understood because of the potential harm to the health of workers.
- Endocrine impacts and the future of exposure – we're learning more about the impacts of some chemicals such as PFOS to the environment and (maybe) human health. What will this mean in the future?

About the Speaker

Daniel Clark is the founder and President of Clark Health and Safety Ltd., providing safety and quality consultation and auditing services across various industries in Calgary, Alberta starting in 2018. Prior to that, Daniel worked on implementing safety and quality management systems at various companies pursuing ISO or COR certification.

Daniel has a Bachelor of Science degree, certification in health and safety, certificates in both CAD design and CNC operation, ISO 9001:2015 and 45001:2018 auditing certifications as well as certification to train other lead auditors in those frameworks through PECB. Additionally, Daniel has earned the professional designations of Canadian Registered Safety Professional (CRSP) and National Construction Safety Officer (NCSO) for his work in the safety industry, and is a Certified Quality Improvement Associate (CQIA) through the ASQ.

Being raised and practicing in Calgary, the heart of Canada's energy industry, most of Daniel's career has been connected to the safety and quality in the energy industry. He has performed safety and quality roles from field supervision to office-based administration and management. Daniel's consulting business has worked with organizations offering engineering services, restoration, industrial trades, recreation, pipeline, environmental, manufacturing and food processing.